

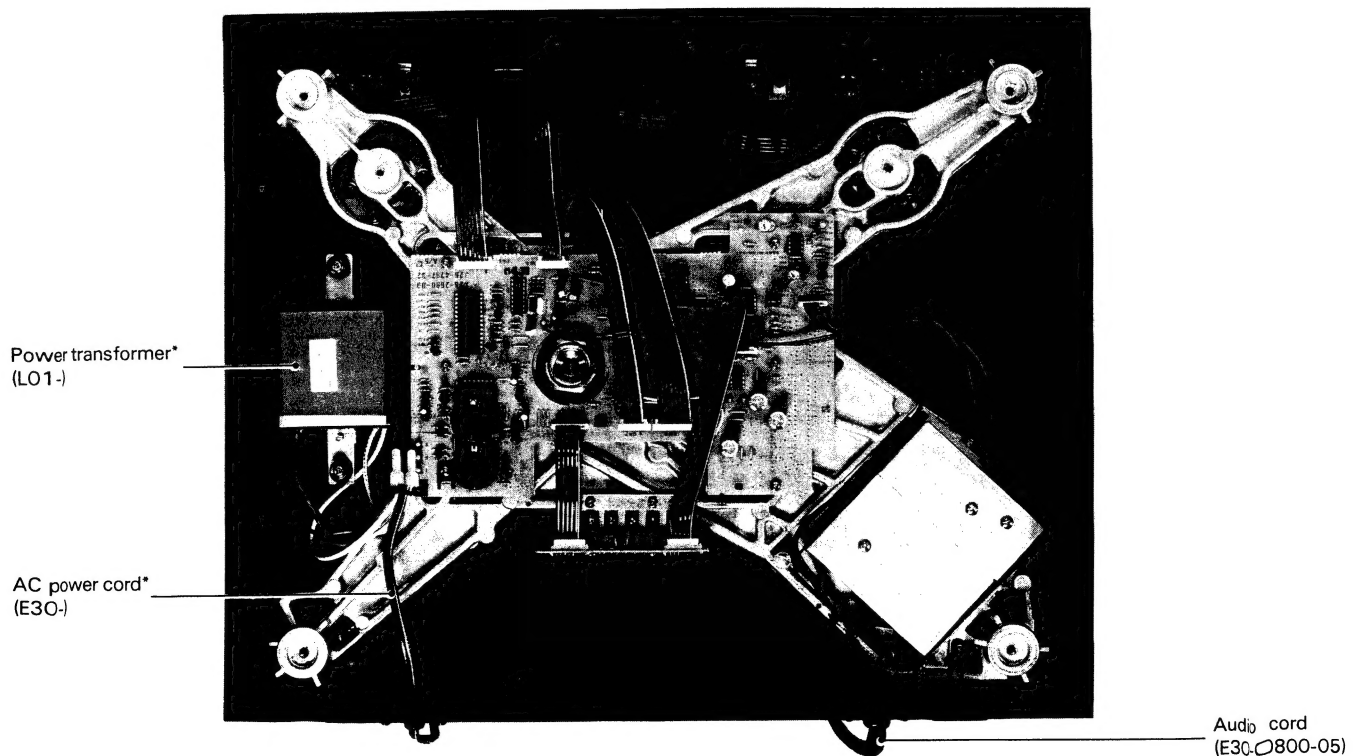
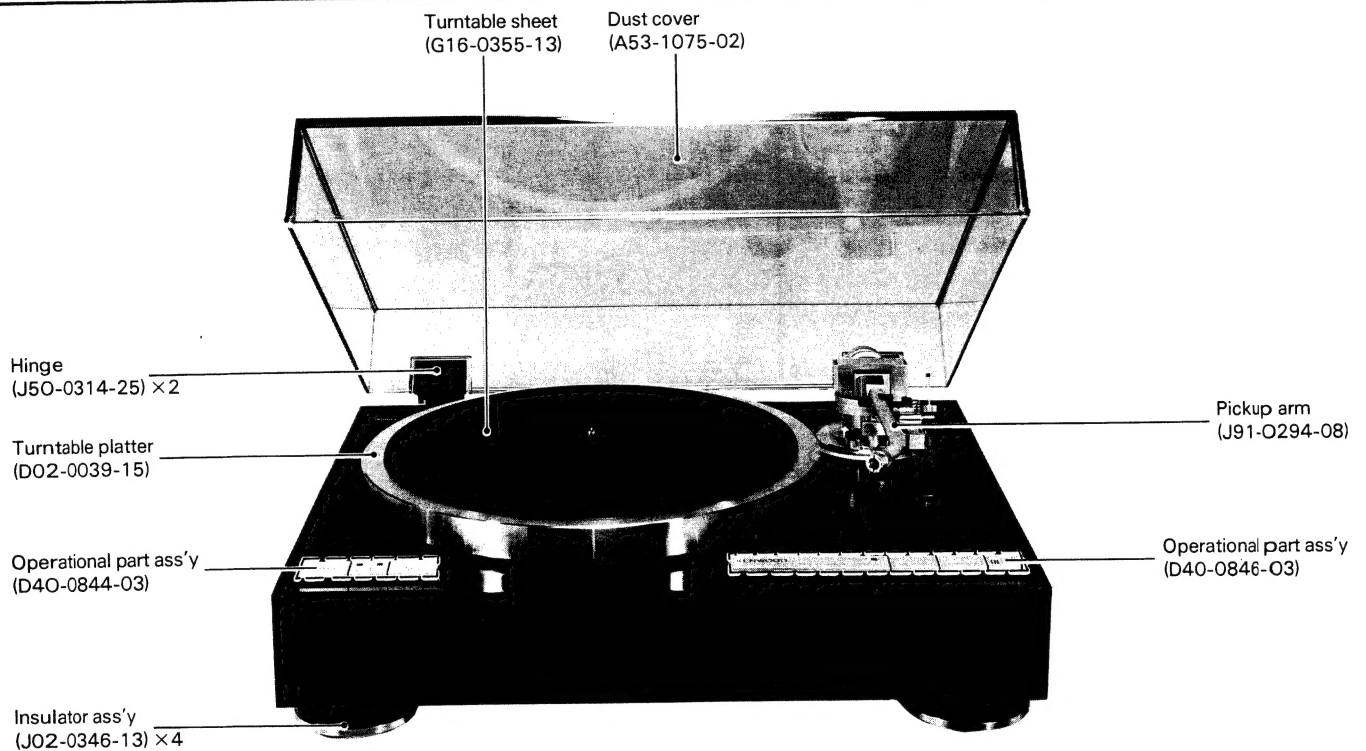
AUTO LIFT UP TURNTABLE

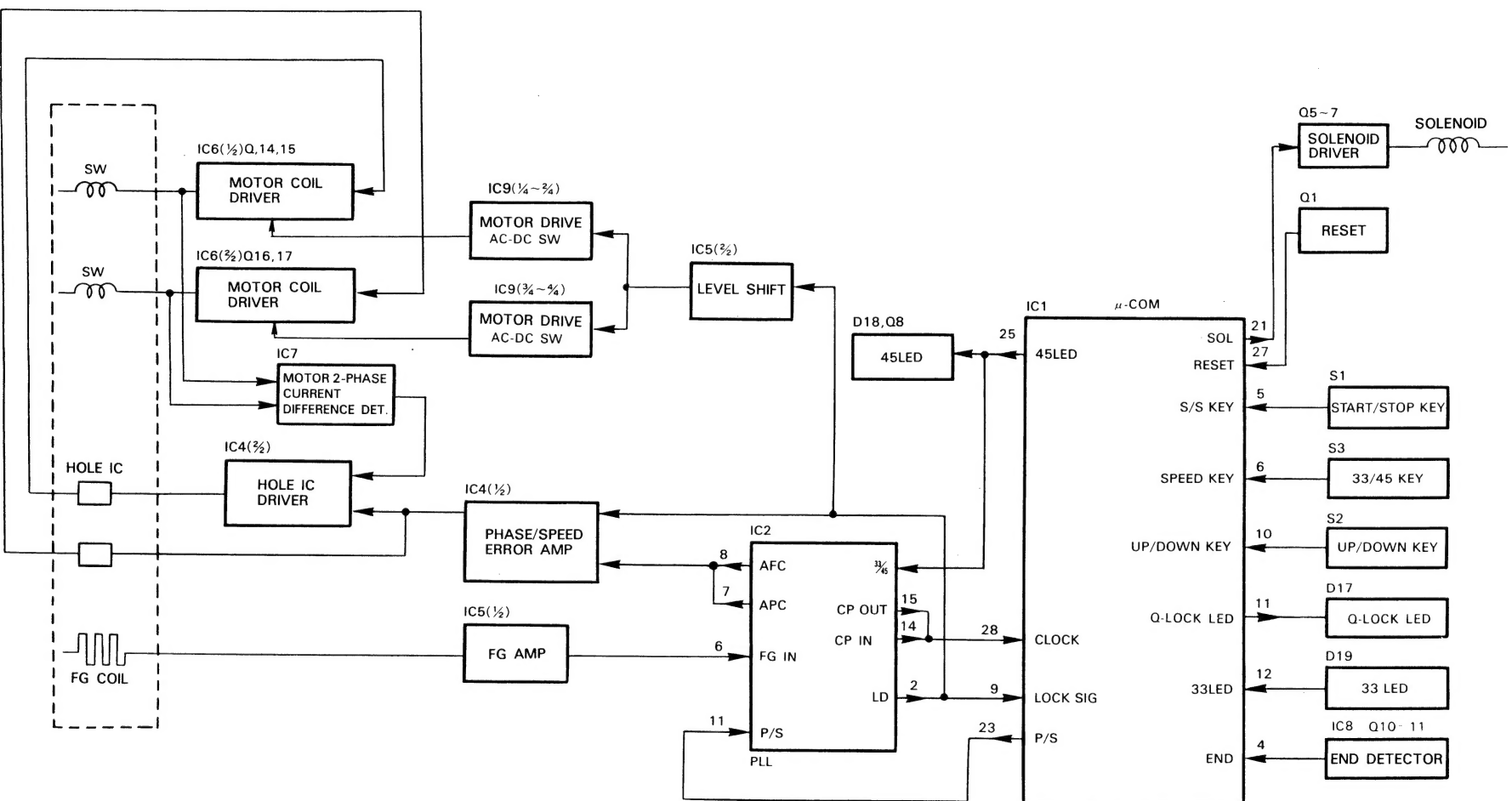
# KD-7010

## SERVICE MANUAL

# KENWOOD

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B51-3726-00(B)1644





## CIRCUIT DESCRIPTION

### 1. Functions of Semiconductors

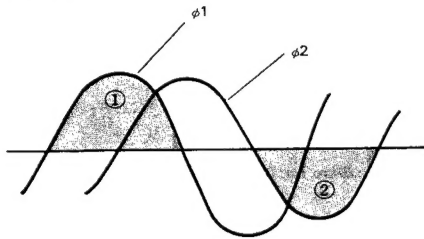
#### ELECTRIC UNIT (X25-2580-00)

| Element | Function   | Operation, Condition & Interchangeability   |
|---------|--|---|
| IC1     | Microprocessor                                     | Refer to the description of $\mu$ PD7520.   |
| IC2     | PLL controller                                     | For motor speed and phase control.<br>Refer to the description of TC9142P.  |
| IC3     | Power ON/OFF                                       | Each time Power SW S4 is pressed, the output from pin 2 switches between H and L, which controls Q5 to turn power ON and OFF.   |
| IC4     | Error amplifier, Hole IC driver                    | Drives the Hole ICs of the motor, based on the speed and phase error signals from IC2.  |
| IC5     | FG amplifier<br>Level shifter                      | Amplifies the motor's FG output.<br>Shifts the level of the IC2's Lock signal from (0 — 8 V) to (+10 — -10 V), and turns IC9 (analog SW) and Q9 ON and OFF.                                     |
| IC6     | Motor driver                                       | Amplifies the motor's Hall IC output to drive the motor coil. Q14 to Q17 are output current boosters.   |
| IC7     | Difference detector for 2-phase motor coil current | Detects the difference values of the 2-phase current from the motor coil, and sends the signal to IC4 in order to eliminate the difference.   |
| IC8     | End detector                                       | Amplifies the photo-reflector output, detects the tonearm position, differentiate the position detection output for conversion into speed, and compares it in order to detect the guide groove. |
| IC9     | Analog SW, motor driver AC/DC coupling switch      | The SW is OFF and the coupling is AC when the motor is quartz-locked, and the coupling is DC in other cases.  |
| Q1      | +8 V power supply                                  | Increases the current of Zener diode D8.  |
| Q2      | Microprocessor reset                               |   |
| Q3      | Power ON/OFF                                       | Q3 turns ON/OFF depending on the IC3's flip-flop output, controls the voltage at the base of Q1, and turns power ON and OFF.  |
| Q4      | IC3 reset  | Detects the Zener current from Zener diode D9, and resets IC3. It is initialized so that the Power SW is OFF when the power cord is connected.  |
| Q5      | Q6 driver  | Turned ON by microprocessor IC1 in solenoid drive operation (with microprocessor output "L").   |
| Q6      | Solenoid driver                                    | ON when SOL is ON.  |
| Q7      | Solenoid driver                                    | Turns ON for approx. 8 seconds from the solenoid kick operation.  |
| Q8      | LED driver   | When the speed is set for 45 rpm, Q8 turns ON by "H" output from the microprocessor.  |
| Q9      | IC7 output OFF switch                              | Inhibits the operation of the 2-phase current difference detector circuit while the motor is not quartz-locked.   |
| Q10, 11 | End detector                                       | Controls the photo-reflector output used for end detection.   |
| Q12, 13 | $\pm 10$ V power supply                            | Increases the current of Zener diodes D6 and D7.  |
| Q14~17  | Motor driver                                       | Drives the motor coil for IC6 output current boost.   |

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## 2. Two-phase current difference detector circuit

The wow & flutter of a two-phase motor deteriorates when there is a difference between the current values of the two phases,  $\phi 1$  and  $\phi 2$ . With the KP-990, this difference is eliminated by using a circuit which detects the difference between the two phase currents and adjusts the drive current of the Hole ICs.

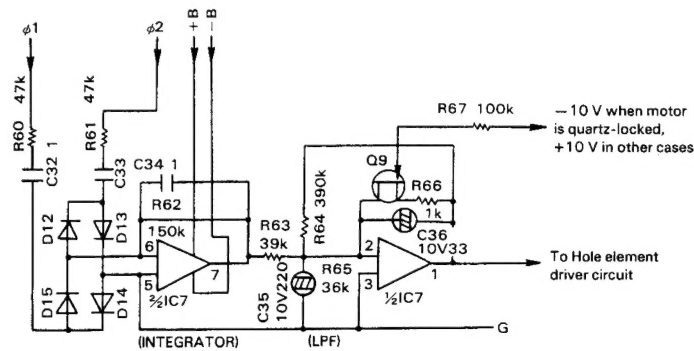


The positive side of  $\phi 1$  and negative side of  $\phi 2$  are input to the integrator, and the difference between  $\phi 1$  and  $\phi 2$  is output from it. (The difference between the ① and ② portions in the diagram on the left)

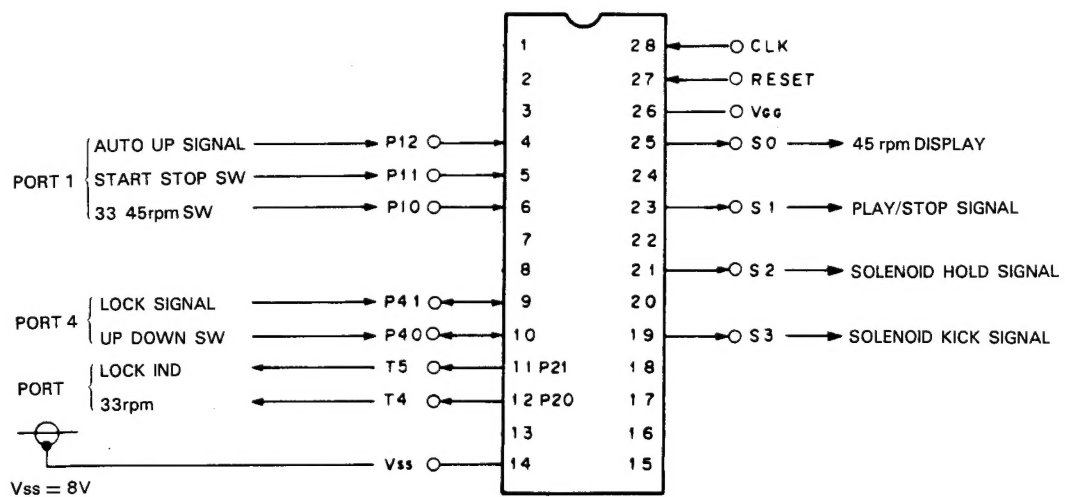
Then, the ripple incorporated in the output is eliminated by the low-pass filter, and its output is recognized as the difference between the two phase currents.

The Hole element drive circuit uses this signal to control the currents of the two Hole ICs so that  $\phi 1$  and  $\phi 2$  current values are equal.

When the motor is not quartz-locked, Q9 is ON, the output is fixed at about 0 V, and this circuit does not operate.



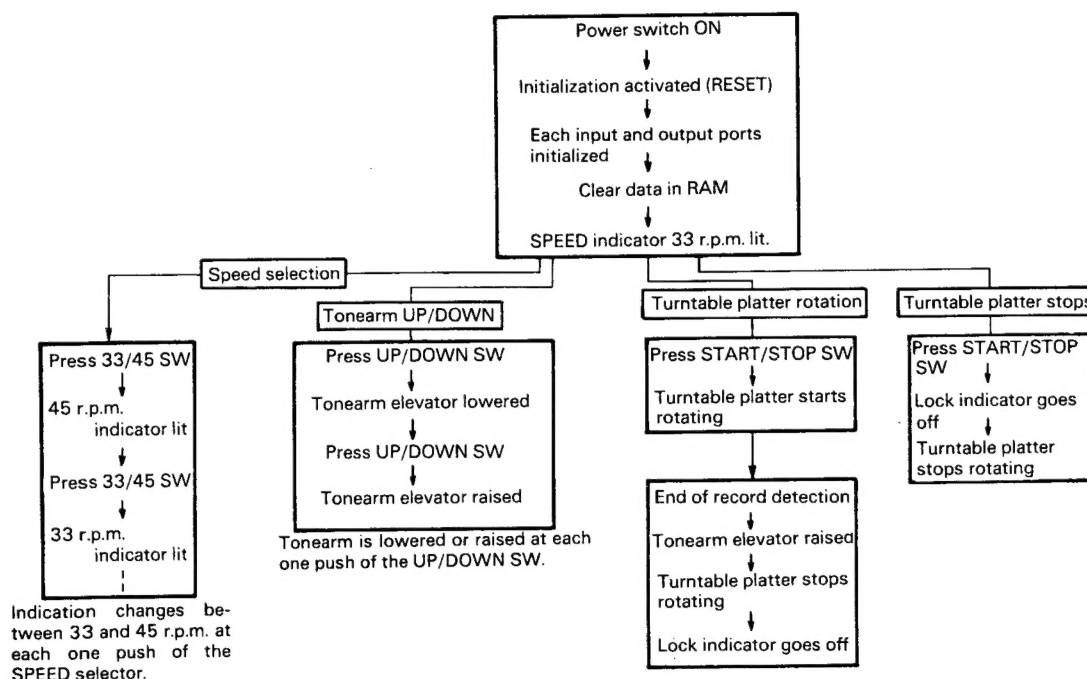
## 3. Microprocessor Operation Description





## • Operation specifications of $\mu$ PD7520

The following diagram shows the operations of each section which occur at each operating point after power has been turned on.



## Condition of each $\mu$ PD7520C-028 ports

- (1) Initialization (Power ON)
- (2) Speed selection (33/45 rpm)
- (3) Turntable platter starts rotating (START)
- (4) Tonearm auto up
- (5) Turntable platter stops rotating (STOP)

The above mentioned (1) ~ (5) are placed in the order of the functions described in " $\mu$ PD7520C-028 Function description". The conditions shown in the table below are also in that order so that functions can be confirmed while checking the IC's ports.

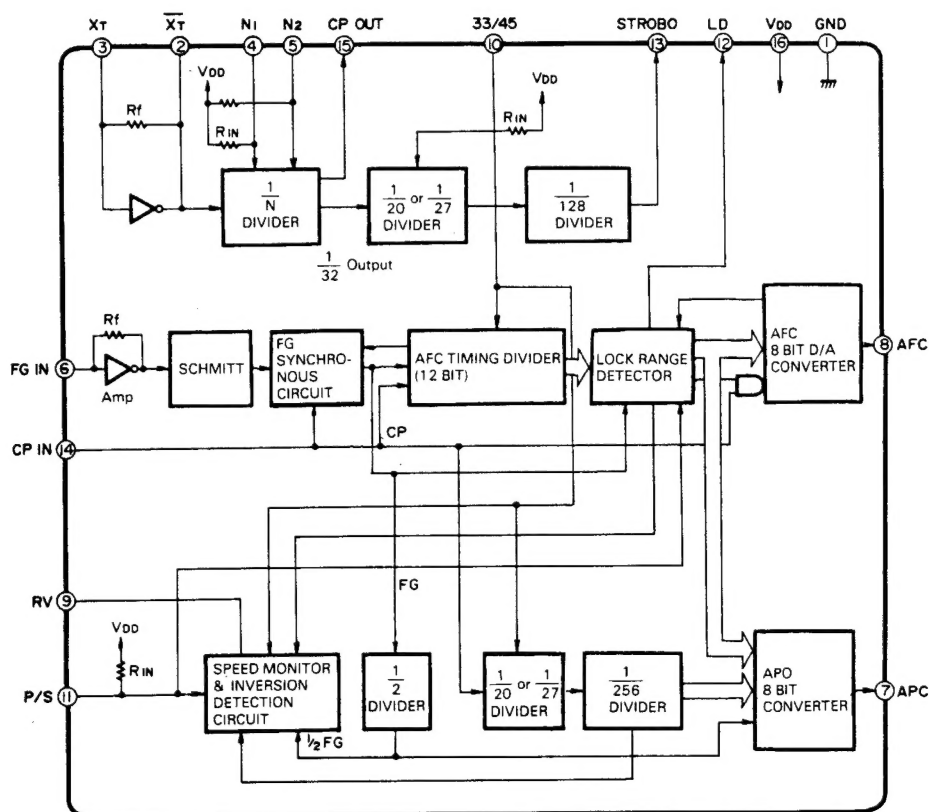
|           |   | INPUT PORT |               |                |          |            |             | OUTPUT PORT |          |           |                   |                |             |
|-----------|---|------------|---------------|----------------|----------|------------|-------------|-------------|----------|-----------|-------------------|----------------|-------------|
| PORT NO.  |   | P10        | P11           | P12            | P13      | P40        | P41         | T4          | T5       | S0        | S1                | S2             | S3          |
| PIN NO.   |   | 6          | 5             | 4              | 3        | 10         | 9           | 12          | 11       | 25        | 23                | 21             | 19          |
| PORT NAME |   | 33/45 SW   | START STOP SW | AUTO UP Signal | Not used | UP DOWN SW | LOCK Signal | 33rpm LED   | LOCK LED | 45rpm LED | START STOP Signal | UP DOWN Signal | Kick Signal |
| (1)       | Power ON RESET                            |            |               |                |          |            |             |             |          |           |                   |                |             |
| (2)       | 33/45 SW ON (45)<br>↓<br>33/45 SW ON (33) |            |               |                |          |            |             |             |          |           |                   |                |             |
| (3)       | START/STOP SW ON                          |            |               |                |          |            |             |             |          |           |                   |                |             |
| (4)       | Auto up signal IN<br>START/STOP SW ON     |            |               |                |          |            |             |             |          |           |                   |                |             |
| (5)       | START/STOP SW ON                          |            |               |                |          |            |             |             |          |           |                   |                |             |

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## 4. Quartz PLL Motor Controller (C2-MOS LSI)

TC9142P is a motor controller for quartz lock type direct drive turntable motors. This IC employs 8-bit D/A converter for rotational speed control and phase control instead of the conventional capacitor type sampling hold circuit. This method will reduce the numbers of components and also gets free from adjustments.

### • BLOCK DIAGRAM



ADJUSTMENT/REGLAGES/ABGLEICH

● Functions of terminals

| CODE          | NAME                               | FUNCTION DESCRIPTION   | REMARKS                     |
|---------------|------------------------------------|--|-----------------------------|
| 1 GND         | Ground                             | Ground terminal for IC   |                             |
| 2 XT,<br>3 XT | X'tal connection                   | Connect a crystal between these two pins.  | Built-in feed back resistor |
| 4 N1<br>5 N2  | Reference divid-<br>ing factor sw. | Dividing factor of 4,32 or 128 can be selected for reference crystal frequency by these ports. | Built-in pull-up resistor   |
| 6 FG-IN       | FG pulse input                     | Pulses generated as motor rotates is input to this port for rotational speed detection.        |                             |
| 7 APC         | APC output                         | Automatic phase controller output.<br>(8-bit D/A converter output)                             | Built-in amp                |
| 8 AFC         | AFC output                         | F-V converter output for rotational speed control.<br>(8-bit D/A converter output)             |                             |
| 9 RV          | Inversion signal output            | Inversion signal output for turntable motor.   |                             |
| 10 33/45      | Speed selector                     | Rotational speed selector port.<br>(L: 33 1/3 r.p.m.)<br>(H or NC: 45 r.p.m.)                  | Built-in pull-up resistor   |
| 11 P/S        | PLAY/STOP input                    | Input port to select PLAY or STOP state of the turntable motor.                                | Built-in pull-up resistor   |
| 12 LD         | Lock detection output              | Outputs "H" when the rotational speed is in the lock range, otherwise "L".                     |                             |
| 13 STROBO     | STROBO output                      | Reference frequency output for stroboscope with the duty ratio of 1/8.                         |                             |
| 14 CP-IN      | CP-IN input                        | This port is normally connected oscillator input to this port will fine speed adjustment.      |                             |
| 15 CP-OUT     | CP-OUT output                      | Divided frequency output of crystal oscillator for reference, normally connected to CP-IN.     |                             |
| 16 VDD        | VDD                                | Feed power supply voltage of 5-9.5V.   |                             |

ADJUSTMENT

| No. | ITEM                         | INPUT SETTINGS | OUTPUT SETTINGS                              | TURNTABLE SETTING   | ALIGNMENT POINTS | ALIGN FOR | FIG. |
|-----|------------------------------|----------------|--|---|------------------|-----------|------|
| 1   | END DETECT STARTING POSITION | —              | Connect a DC voltmeter to TP1 (Pin 7 of IC8) | Set the stylus tip so that 57.5mm is obtained from the center of the turntable spindle. | VR1              | 0.9V      | (a)  |
| 2   | THRESHOLD VOLTAGE            | —              | Connect a DC voltmeter to TP2 (Pin 2 of IC8) | —   | VR2              | 220mV     | (b)  |

REGLAGES

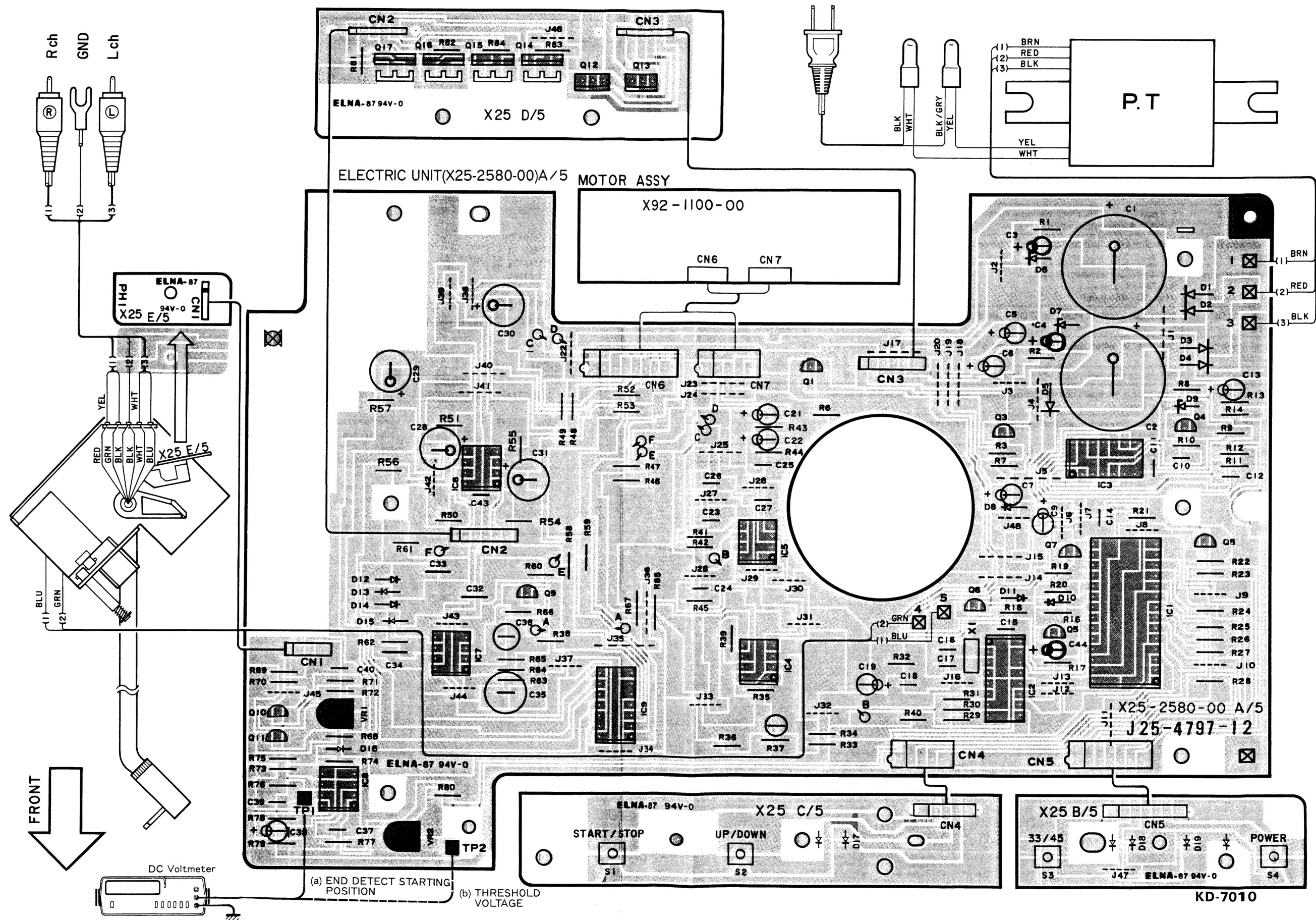
| N° | ITEM   | REGLAGE DE L'ENTREE | REGLAGE DE LA SORTIE                              | REGLAGE DE TOURNE-DISQUE  | POINTS L'ALIGNMENT | ALIGNER POUR | FIG. |
|----|--|---------------------|---|---|--------------------|--------------|------|
| 1  | POSITION DE DEPART LA TERMINASION DE DETECTEUR | —                   | Connecteur un voltmètre CC à TP1 (Fiche 7 de IC8) | Régler la crête de aiguille de façon de 57,5mm soit obtenir de centre de plateau à disques. | VR1                | 0,9V         | (a)  |
| 2  | TENTION DE SEUIL                               | —                   | Connecteur un voltmètre CC à TP2 (Fiche 2 de IC8) | —   | VR2                | 220mV        | (b)  |

ABGLEICH

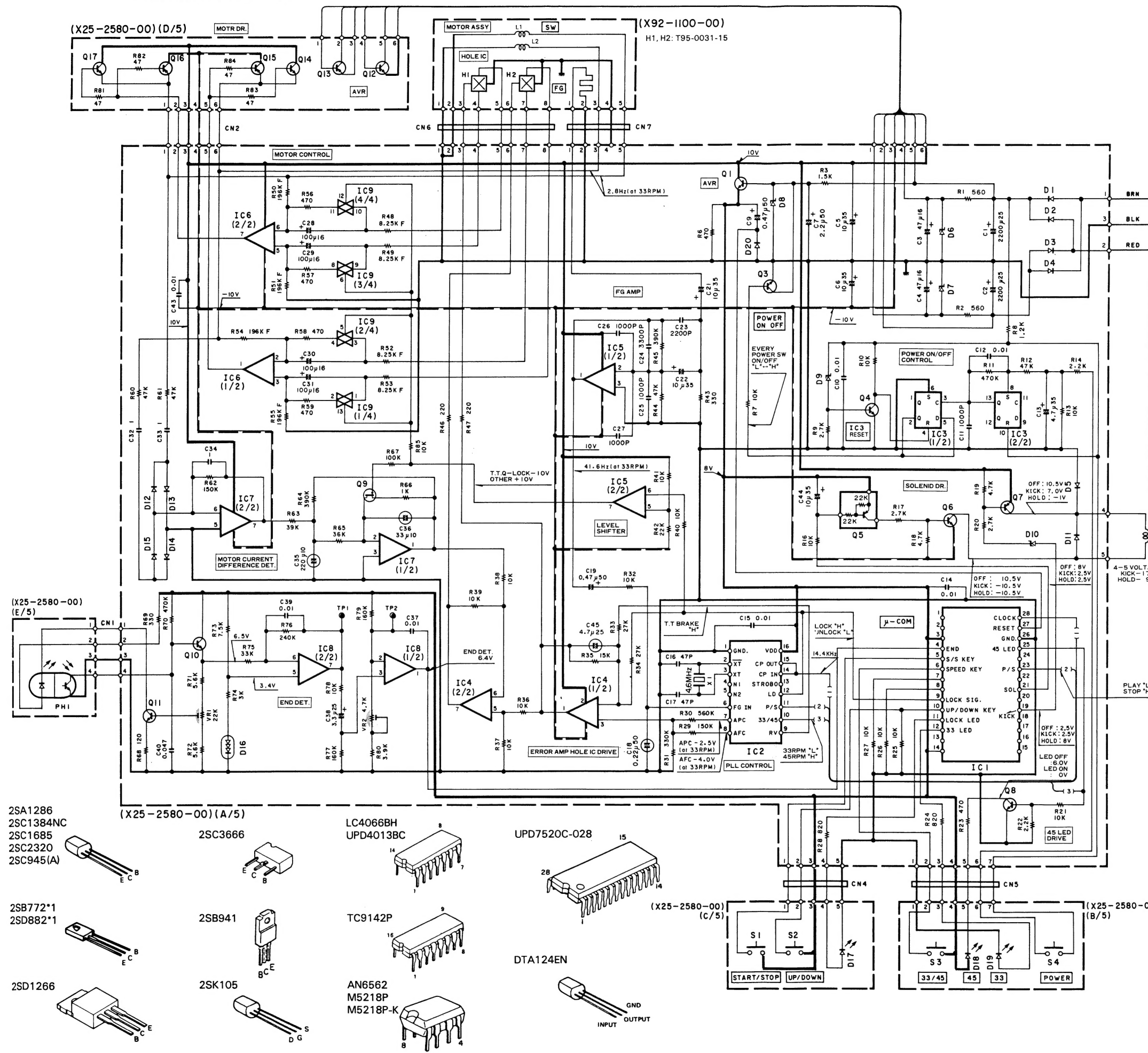
| NR. | GEGENSTAND                    | EINGANGS-EINSTELLUNG | AUSGANGS-EINSTELLUNG  | PLATTEN SPIELER-EINSTELLUNG  | ABGLEICH PUNKTE | ABGLEICHEN FÜR | ABB. |
|-----|-------------------------------|----------------------|---|--|-----------------|----------------|------|
| 1   | ENDE DETEKTS ANFANGS-STELLUNG | —                    | Einen Gleichspannungs messer zum TP1 (Stift 7 von IC8) anschließen. | Der spitze von Tonabnehmer so einstellen, daß ein 57,5mm aus der mitte des Plattentellers erhalt wird. | VR1             | 0,9V           | (a)  |
| 2   | SCHWELLEN-SPANNUNG            | —                    | Einen Gleichspannungs messer zum TP2 (Stift 2 von IC8) anschließen. | —  | VR2             | 220mV          | (b)  |

# PC BOARD (COMPONENT SIDE VIEW)

Refer to the schematic diagram for the values of resistor and capacitors.







- IC1 :  $\mu$ PD7520C-028  
 IC2 : TC9142P  
 IC3 :  $\mu$ PD4013BC  
 IC4,5 : M5218P  
 IC6,7 : M5218P-K  
 IC8 : AN6562  
 IC9 : LC4066BH  
 PHI : NJL5141E-A
- Q1 : 2SC3666  
 Q3,4,8 : 2SC945(A)(Q,P), 2SC2320(E,F)  
 or 2SC1685(R,S)  
 Q5 : DTA124EN  
 Q6 : 2SC1384NC(R,S)  
 Q7 : 2SA1286  
 Q9 : 2SK105(F,H)  
 Q10,11 : 2SC2320(F,G)  
 Q12 : 2SD1266  
 Q13 : 2SB941  
 Q14,17 : 2SD882\*(I,Q,P)  
 Q15,16 : 2SB772\*(I,Q,P)
- D1-5 : S5566B  
 D6,7 : RD1ES(B)  
 D8 : RD8.2JS(B)  
 D9,10 : RD5.1JS(B)  
 D11 : ISS178  
 D12-15 : ISS133 or ISS176  
 D16 : MA27T(A)  
 D17,19 : B30-1012-05  
 D18 : B30-1010-05  
 D20 : ISS133 or ISS176

DC voltages are measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

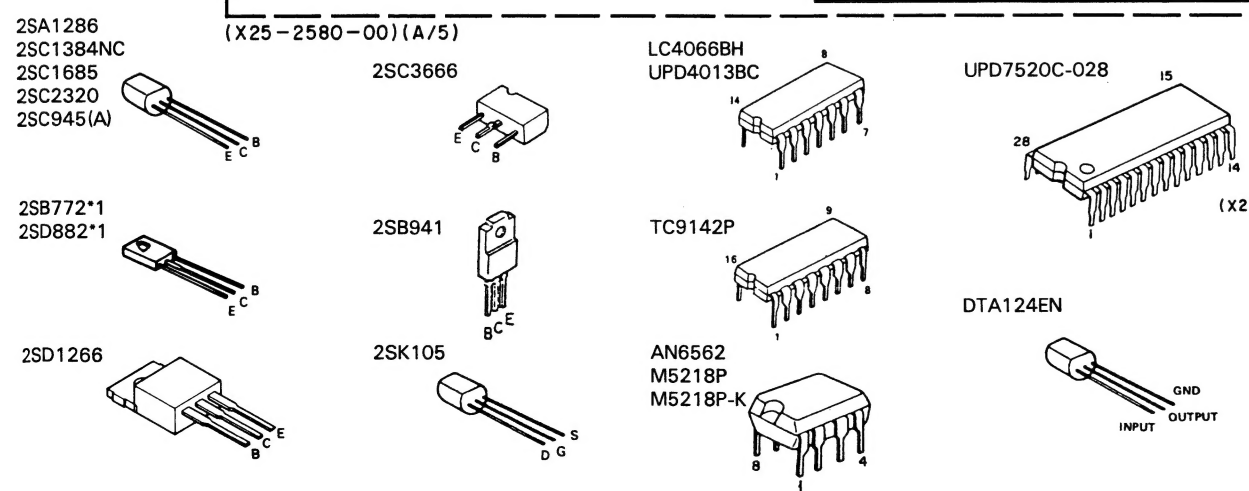
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).  $\triangle$  indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

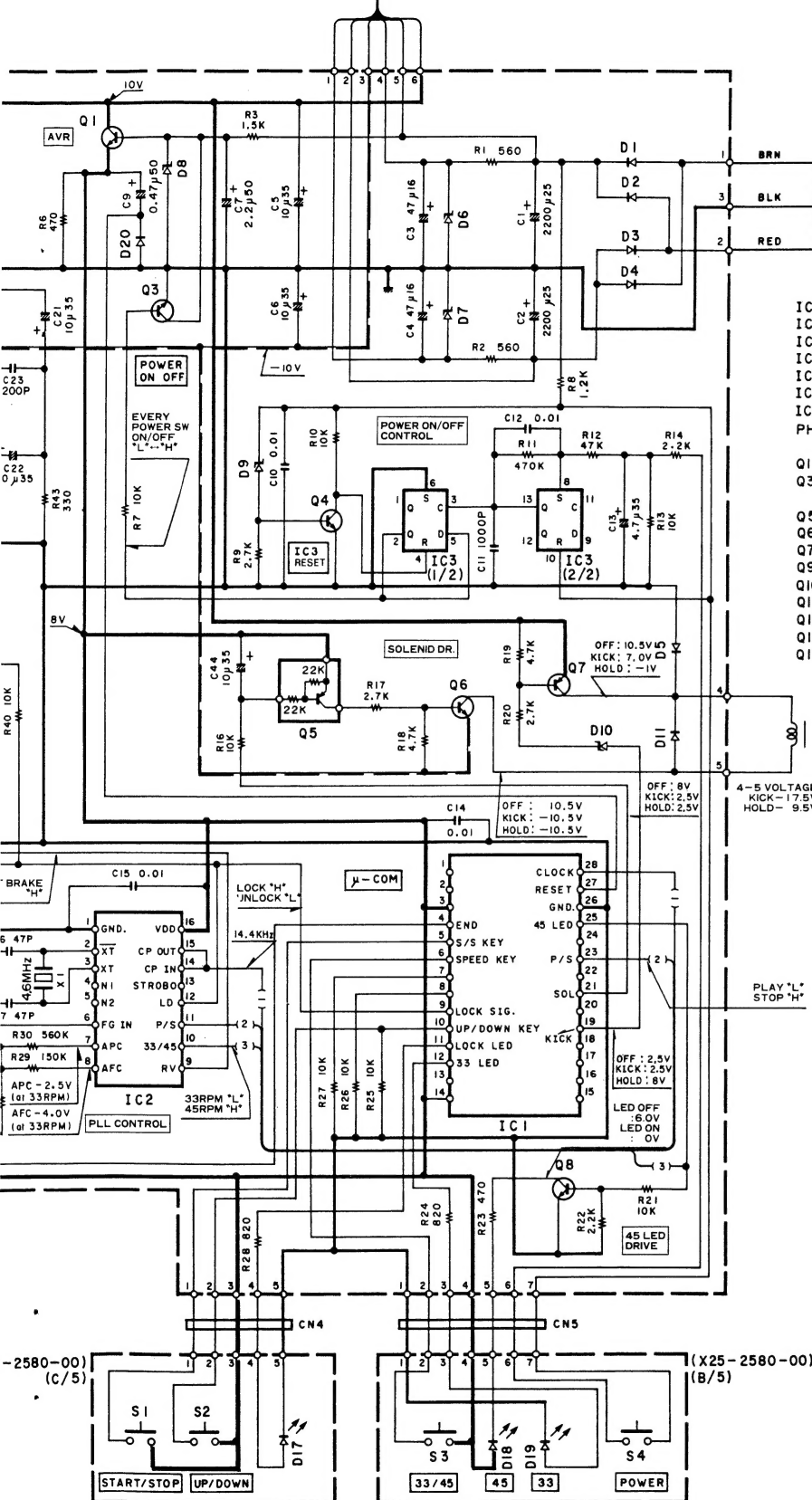
KD-7010

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**KENWOOD**

Y21-3001-01



## EXPLODED VIEW (MAIN UNIT)

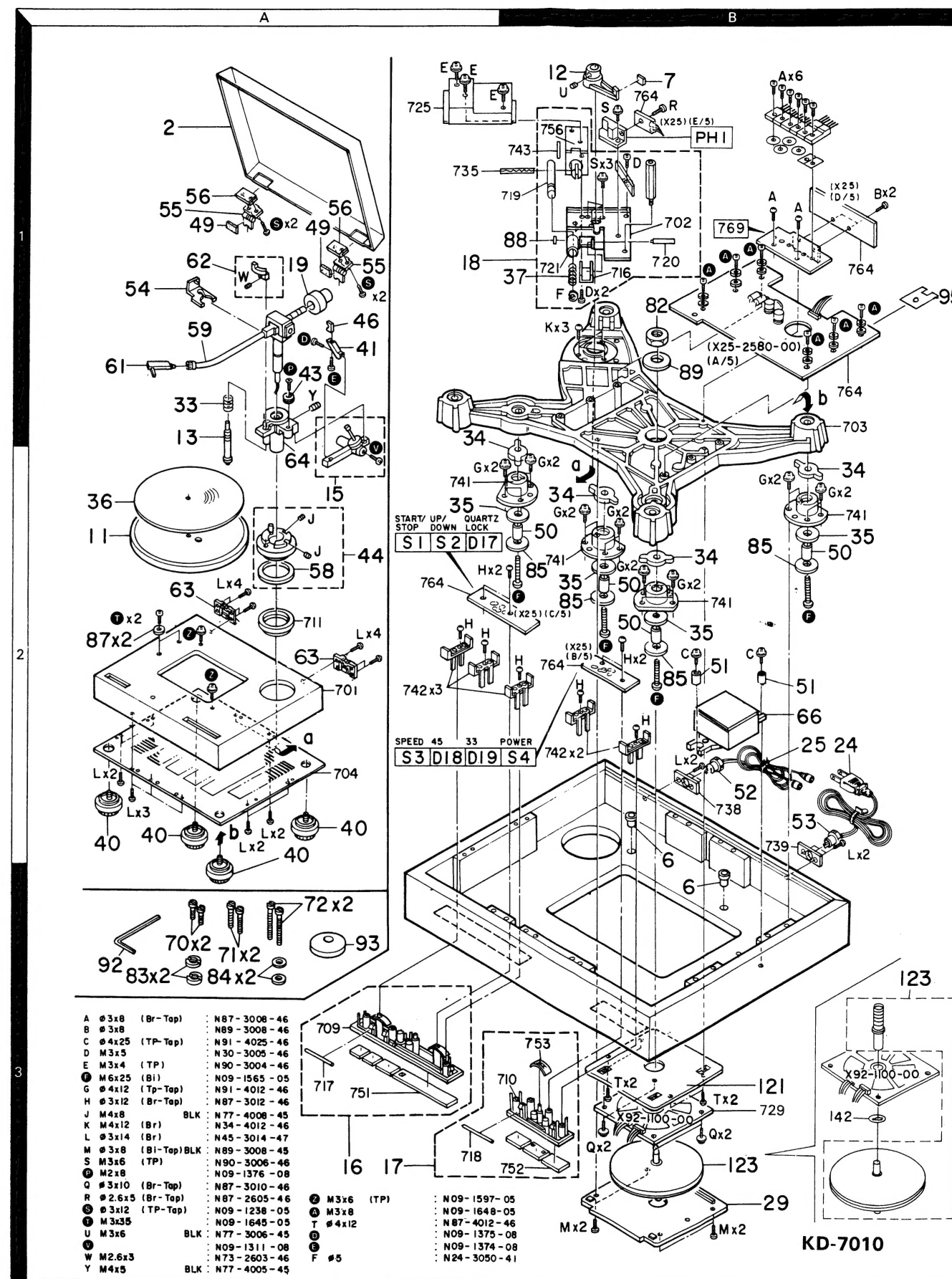


KD-7010

# KD-7010

## KENWOOD

Y21-3001-01



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Les articles non mentionnes dans le Parts No. ne sont pas fournis.  
Teile ohne Parts No. werden nicht geliefert.

| Ref. No.         | Address | New Parts | Parts No.   | Description                    | Desti-nation | Re-marks |
|------------------|---------|-----------|-------------|--------------------------------|--------------|----------|
| 参照番号             | 位 置     | 新         | 部 品 番 号     | 部 品 名 / 規 格                    | 仕 向          | 備考       |
| KD-7010          |         |           |             |                                |              |          |
| 2                | 1A      | *         | A53-1075-02 | DUST COVER                     |              |          |
| 6                | 2B,3B   |           | B09-0051-04 | CAP                            |              |          |
| 7                | 1B      |           | B19-0510-14 | MIRROR                         |              |          |
| -                |         |           | B46-0121-03 | WARRANTY CARD                  | P            |          |
| -                |         |           | B46-0122-13 | WARRANTY CARD                  | E            |          |
| -                |         |           | B46-0143-03 | WARRANTY CARD                  | T            |          |
| -                |         | *         | B50-9351-00 | INSTRUCTION MANUAL             |              |          |
| -                |         | *         | B50-9352-00 | INSTRUCTION MANUAL             | PE           |          |
| -                |         | *         | B50-9353-00 | INSTRUCTION MANUAL             | E            |          |
| -                |         |           | B58-0290-04 | CAUTION CARD                   |              |          |
| -                |         |           | B58-0386-04 | CAUTION CARD                   |              |          |
| -                |         |           | B58-0518-04 | CAUTION CARD                   | ET           |          |
| -                |         |           | B58-0519-04 | CAUTION CARD                   | P            |          |
| 11               | 2A      |           | D02-0039-15 | TURNABLE PLATTER               |              |          |
| 12               | 1B      |           | D10-0944-24 | ARM                            |              |          |
| 13               | 1A      |           | D21-1007-08 | SHAFT ASSY                     |              |          |
| 15               | 2A      |           | D39-0169-08 | ANTI-SKATING DEVICE ASSY       |              |          |
| 16               | 3A      | *         | D40-0846-03 | OPERATIONAL PART ASSY          |              |          |
| 17               | 3A      | *         | D40-0844-03 | OPERATIONAL PART ASSY          |              |          |
| 18               | 1A      |           | D40-0511-23 | AUTO-UP MECHANISM ASSY         |              |          |
| 19               | 1A      |           | D91-0069-08 | MAIN WEIGHT                    |              |          |
| △<br>△<br>△<br>△ | 24      |           | E29-0309-05 | WIRE CONNECTION CAP            | E            |          |
| △                | 24      |           | E30-0459-05 | AC POWER CORD                  | P            |          |
| △                | 24      |           | E30-0780-05 | AC POWER CORD                  | T            |          |
| △                | 24      |           | E30-1416-05 | AC POWER CORD                  |              |          |
| △                | 25      |           | E30-0800-05 | AUDIO CORD                     |              |          |
|                  | 29      |           | F07-0483-03 | COVER                          |              |          |
| 33               | 1A      |           | G01-1057-08 | TORSION COIL SPRING            |              |          |
| 34               | 1A,2B   |           | G11-1127-04 | CUSHION                        |              |          |
| 35               | 2A,2B   |           | G11-1128-04 | CUSHION                        |              |          |
| 36               | 2A      |           | G16-0355-13 | TURNABLE SHEET                 |              |          |
| 37               | 1B      |           | G01-1078-04 | COMPRESSION SPRING             |              |          |
| -                |         | *         | H01-8395-04 | ITEM CARTON CASE               |              |          |
| -                |         |           | H10-1864-02 | POLYSTYRENE FOAMED FIXTURE(T,T |              |          |
| -                |         |           | H10-1865-02 | POLYSTYRENE FOAMED FIXTURE(L)  |              |          |
| -                |         |           | H10-1866-02 | POLYSTYRENE FOAMED FIXTURE(R)  |              |          |
| -                |         |           | H12-0393-02 | CARTON BOARD                   |              |          |
| -                |         |           | H20-0469-04 | PROTECTION COVER               |              |          |
| -                |         |           | H25-0029-04 | PROTECTION BAG (60X110)        |              |          |
| -                |         |           | H25-0232-04 | PROTECTION BAG (235X350X0.03)  |              |          |
| 40               | 2A      |           | J02-0346-13 | INSULATOR ASSY                 |              |          |
| 41               | 1A      |           | J19-0812-08 | HOLDER                         |              |          |
| 43               | 1A      |           | J19-0814-08 | HOLDER                         |              |          |
| 44               | 2A      |           | J19-2580-08 | TONEARM BASE ASSY              |              |          |
| 46               | 1A      |           | J19-2614-08 | TONEARM REST                   |              |          |
| 49               | 1A      |           | J30-0183-05 | SPACER (38X15X1.6)             |              |          |
| 50               | 2B      |           | J31-0263-05 | COLLAR                         |              |          |
| 51               | 2B      |           | J31-0273-05 | COLLAR                         |              |          |
| △                | 52      |           | J41-0033-05 | POWER CORD BUSHING             |              |          |
| △                | 53      |           | J42-0078-05 | POWER CORD BUSHING             |              |          |

E: Scandinavia & Europe K: USA P: Canada  
U: PX(Far East, Hawaii) T: England M: Other Areas  
UE: AAFES(Europe) X: Australia

△ indicates safety critical components.

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| 参照番号  | 位 置     | 新         | 部 品 番 号       | 部 品 名 / 規 格                    | 仕 向          | 備考       |
| 54  | 1A      |           | J42-0317-08   | BUSHING                        |              |          |
| 55  | 1A      |           | J50-0314-25   | HINGE                          |              |          |
| 56  | 1A      |           | J50-0322-04   | HINGE PLATE                    |              |          |
| 58  | 2A      |           | J69-0035-05   | RING                           |              |          |
| 59  | 1A      |           | J91-0294-08   | PICKUP ARM                     |              |          |
| 61  | 1A      |           | J92-0053-15   | SHELL                          |              |          |
| 62  | 1A      |           | J99-0020-08   | TONEARM LIFTER                 |              |          |
| 63  | 2A      |           | J21-2302-05   | HOLDER                         |              |          |
| 64  | 2A      |           | J19-2656-08   | LIFTER BASE                    |              |          |
| -   |         |           | J61-0054-05   | WIRE BAND                      |              |          |
| -   |         |           | J61-0307-05   | WIRE BAND                      |              |          |
| △<br>△<br>△                                       | 66      |           | L01-7121-05   | POWER TRANSFORMER              | P            |          |
| △   | 66      |           | L01-7122-05   | POWER TRANSFORMER              | E            |          |
| △   | 66      | *         | L01-7127-05   | POWER TRANSFORMER              | T            |          |
| 70  | 3A      |           | N09-0850-04   | CARTRIDGE MOUNTING SCREW(M2.6X |              |          |
| 71  | 3A      |           | N09-0851-04   | CARTRIDGE MOUNTING SCREW(M2.6X |              |          |
| 72  | 3A      |           | N09-0852-04   | CARTRIDGE MOUNTING SCREW(M2.6X |              |          |
| 82  | 1B      |           | N14-0164-05   | HEXAGON NUT                    |              |          |
| 83  | 3A      |           | N14-0412-04   | CIRCULAR NUT                   |              |          |
| 84  | 3A      |           | N19-0175-09   | FLAT WASHER                    |              |          |
| 85  | 2B      |           | N19-0965-05   | FLAT WASHER                    |              |          |
| 87  | 2A      |           | N19-0985-05   | FLAT WASHER                    |              |          |
| 88  | 1B      |           | N29-0219-05   | RETAINING RING                 |              |          |
| 89  | 1B      |           | N19-0966-05   | M TYPE WASHER                  |              |          |
| A   | 1B      |           | N09-1648-05   | MACHINE SCREW (M3X8)           |              |          |
| D   | 1A      |           | N09-1375-08   | SET SCREW                      |              |          |
| E   | 1A      |           | N09-1374-08   | SET SCREW                      |              |          |
| F   | 2B      |           | N09-1565-05   | MACHINE SCREW (M6X25)          |              |          |
| F   | 1B      |           | N24-3050-41   | E TYPE RETAINING RING          |              |          |
| P   | 1A      |           | N09-1376-08   | SET SCREW                      |              |          |
| S   | 1A      |           | N09-1238-05   | TAPTITE SCREW (3X12)           |              |          |
| T   | 2A      |           | N09-1645-05   | MACHINE SCREW (M3X35)          |              |          |
| V   | 1A,1B   |           | N09-1311-08   | STEPPED SCREW                  |              |          |
| Z   | 2A      |           | N09-1597-05   | MACHINE SCREW (M6X22.2)        |              |          |
| 92  | 3A      |           | W01-0302-08   | HEXAGON WRENCH KEY             |              |          |
| 93  | 3A      |           | W01-0329-04   | EP ADAPTER                     |              |          |
| ELECTRIC UNIT (X25-2580-00: P, X25-2582-71: E, T) |         |           |               |                                |              |          |
| D17   | 2A      |           | B30-1012-05   | LED (QUARTZ LOCK)              |              |          |
| D18   | 2A      |           | B30-1010-05   | LED (45)                       |              |          |
| D19   | 2A      |           | B30-1012-05   | LED (33)                       |              |          |
| C1  | .2      |           | C90-1358-05   | ELECTR0 2200UF 25WV            |              |          |
| C3  | .4      |           | CE04KW1C470M  | ELECTR0 47UF 16WV              |              |          |
| C5  | .6      |           | CE04KW1V100M  | ELECTR0 10UF 35WV              |              |          |
| C7  |         |           | CE04KW1H2R2M  | ELECTR0 2.2UF 50WV             |              |          |
| C9  |         |           | CE04KW1HR47M  | ELECTR0 0.47UF 50WV            |              |          |
| C10   |         |           | CK45FF1H103Z  | CERAMIC 0.010UF Z              |              |          |
| C11   |         |           | CK45FB1H102K  | CERAMIC 1000PF K               |              |          |
| C12   |         |           | CK45FF1H103Z  | CERAMIC 0.010UF Z              |              |          |
| C13   |         |           | CE04KW1V4R7M  | ELECTR0 4.7UF 35WV             |              |          |
| C14   | .15     |           | CK45FF1H103Z  | CERAMIC 0.010UF Z              |              |          |
| C16   | .17     |           | CC45FSL1H470J | CERAMIC 47PF J                 |              |          |
| C18   |         |           | C90-1456-05   | NP-ELEC 0.22UF 50WV            |              |          |
| C19   |         |           | CE04KW1HR47M  | ELECTR0 0.47UF 50WV            |              |          |

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|--|---------------|-------------------|-------------------|---------------------------------|------------------------|--------------------|
| 54   | 1A            |                   | J42-0317-08       | BUSHING                         |                        |                    |
| 55   | 1A            |                   | J50-0314-25       | HINGE                           |                        |                    |
| 56   | 1A            |                   | J50-0322-04       | HINGE PLATE                     |                        |                    |
| 58   | 2A            |                   | J69-0035-05       | RING                            |                        |                    |
| 59   | 1A            |                   | J91-0294-08       | PICKUP ARM                      |                        |                    |
| 61   | 1A            |                   | J92-0053-15       | SHELL                           |                        |                    |
| 62   | 1A            |                   | J99-0020-08       | TONEARM LIFTER                  |                        |                    |
| 63   | 2A            |                   | J21-2302-05       | HOLDER                          |                        |                    |
| 64   | 2A            |                   | J19-2656-08       | LIFTER BASE                     |                        |                    |
|  |               |                   | J61-0054-05       | WIRE BAND                       |                        |                    |
|  |               |                   | J61-0307-05       | WIRE BAND                       |                        |                    |
| △ 66   | 2B            |                   | L01-7121-05       | POWER TRANSFORMER               | P                      |                    |
| △ 66   | 2B            |                   | L01-7122-05       | POWER TRANSFORMER               | E                      |                    |
| △ 66   | 2B            | *                 | L01-7127-05       | POWER TRANSFORMER               | T                      |                    |
| 70   | 3A            |                   | N09-0850-04       | CARTRIDGE MOUNTING SCREW(M2. 6X |                        |                    |
| 71   | 3A            |                   | N09-0851-04       | CARTRIDGE MOUNTING SCREW(M2. 6X |                        |                    |
| 72   | 3A            |                   | N09-0852-04       | CARTRIDGE MOUNTING SCREW(M2. 6X |                        |                    |
| 82   | 1B            |                   | N14-0164-05       | HEXAGON NUT                     |                        |                    |
| 83   | 3A            |                   | N14-0412-04       | CIRCULAR NUT                    |                        |                    |
| 84   | 3A            |                   | N19-0175-09       | FLAT WASHER                     |                        |                    |
| 85   | 2B            |                   | N19-0965-05       | FLAT WASHER                     |                        |                    |
| 87   | 2A            |                   | N19-0985-05       | FLAT WASHER                     |                        |                    |
| 88   | 1B            |                   | N29-0219-05       | RETAINING RING                  |                        |                    |
| 89   | 1B            |                   | N19-0966-05       | M TYPE WASHER                   |                        |                    |
| A  | 1B            |                   | N09-1648-05       | MACHINE SCREW (M3X8)            |                        |                    |
| D  | 1A            |                   | N09-1375-08       | SET SCREW                       |                        |                    |
| E  | 1A            |                   | N09-1374-08       | SET SCREW                       |                        |                    |
| F  | 2B            |                   | N09-1565-05       | MACHINE SCREW (M6X25)           |                        |                    |
| F  | 1B            |                   | N24-3050-41       | E TYPE RETAINING RING           |                        |                    |
| P  | 1A            |                   | N09-1376-08       | SET SCREW                       |                        |                    |
| S  | 1A            |                   | N09-1238-05       | TAPTITE SCREW (3X12)            |                        |                    |
| T  | 2A            |                   | N09-1645-05       | MACHINE SCREW (M3X35)           |                        |                    |
| V  | 1A, 1B        |                   | N09-1311-08       | STEPPED SCREW                   |                        |                    |
| Z  | 2A            |                   | N09-1597-05       | MACHINE SCREW (M6X22. 2)        |                        |                    |
| 92   | 3A            |                   | W01-0302-08       | HEXAGON WRENCH KEY              |                        |                    |
| 93   | 3A            |                   | W01-0329-04       | EP ADAPTER                      |                        |                    |
| <b>ELECTRIC UNIT (X25-2580-00: P, X25-2582-71: E, T)</b> |               |                   |                   |                                 |                        |                    |
| D17  | 2A            |                   | B30-1012-05       | LED (QUARTZ LOCK)               |                        |                    |
| D18  | 2A            |                   | B30-1010-05       | LED (45)                        |                        |                    |
| D19  | 2A            |                   | B30-1012-05       | LED (33)                        |                        |                    |
| C1 ,2  |               |                   | C90-1358-05       | ELECTRO 2200UF 25WV             |                        |                    |
| C3 ,4  |               |                   | CE04KW1C470M      | ELECTRO 47UF 16WV               |                        |                    |
| C5 ,6  |               |                   | CE04KW1V100M      | ELECTRO 10UF 35WV               |                        |                    |
| C7   |               |                   | CE04KW1H2R2M      | ELECTRO 2. 2UF 50WV             |                        |                    |
| C9   |               |                   | CE04KW1HR47M      | ELECTRO 0. 47UF 50WV            |                        |                    |
| C10  |               |                   | CK45FF1H103Z      | CERAMIC 0. 010UF Z              |                        |                    |
| C11  |               |                   | CK45FB1H102K      | CERAMIC 1000PF K                |                        |                    |
| C12  |               |                   | CK45FF1H103Z      | CERAMIC 0. 010UF Z              |                        |                    |
| C13  |               |                   | CE04KW1V4R7M      | ELECTRO 4. 7UF 35WV             |                        |                    |
| C14 ,15  |               |                   | CK45FF1H103Z      | CERAMIC 0. 010UF Z              |                        |                    |
| C16 ,17  |               |                   | CC45FSL1H470J     | CERAMIC 47PF J                  |                        |                    |
| C18  |               |                   | C90-1456-05       | NP-ELEC 0. 22UF 50WV            |                        |                    |
| C19  |               |                   | CE04KW1HR47M      | ELECTRO 0. 47UF 50WV            |                        |                    |

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|------------------|---------------|-------------------|-------------------|------------------------------|------------------------|--------------------|
| C21 ,22          |               |                   | CE04KW1V100M      | ELECTRO 10UF 35WV            |                        |                    |
| C23              |               |                   | CF92FV1H222J      | MF 2200PF J                  |                        |                    |
| C24              |               |                   | CF92FV1H332J      | MF 3300PF J                  |                        |                    |
| C25 -27          |               |                   | CK45FB1H102K      | CERAMIC 1000PF K             |                        |                    |
| C28 -31          |               |                   | CE04GW1C101M      | LL-ELEC 100UF 16WV           |                        |                    |
| C32 -34          |               |                   | CF92V1H105J       | MF 1. 0UF J                  |                        |                    |
| C35              |               |                   | C90-1395-05       | NP-ELEC 220UF 10WV           |                        |                    |
| C36              |               |                   | C90-1396-05       | NP-ELEC 33UF 10WV            |                        |                    |
| C37              |               |                   | CK45FF1H103Z      | CERAMIC 0. 010UF Z           |                        |                    |
| C38              |               |                   | C90-1285-05       | ELECTRO 3. 3UF 25WV          |                        |                    |
| C39              |               |                   | CK45FF1H103Z      | CERAMIC 0. 010UF Z           |                        |                    |
| C40              |               |                   | CK45FF1H473Z      | CERAMIC 0. 047UF Z           |                        |                    |
| C43              |               |                   | CK45FF1H103Z      | CERAMIC 0. 010UF Z           |                        |                    |
| C44              |               |                   | CE04KW1V100M      | ELECTRO 10UF 35WV            |                        |                    |
| C45              |               |                   | C90-1352-05       | NP-ELEC 4. 7UF 25WV          |                        |                    |
| 95               | 1B            |                   | E23-0125-05       | TERMINAL                     |                        |                    |
| X1               |               |                   | L77-0580-05       | CRYSTAL RESONATOR(4. 6MHZ)   |                        |                    |
| R48 ,49          |               |                   | RN14BK2C8251F     | RN 8. 25K F 1/6W             |                        |                    |
| R50 ,51          |               |                   | RN14BK2C1963F     | RN 196K F 1/6W               |                        |                    |
| R52 ,53          |               |                   | RN14BK2C8251F     | RN 8. 25K F 1/6W             |                        |                    |
| R54 ,55          |               |                   | RN14BK2C1963F     | RN 196K F 1/6W               |                        |                    |
| VR1              |               |                   | R12-3097-05       | TRIMMING POT. (22K)          |                        |                    |
| VR2              |               |                   | R12-1069-05       | TRIMMING POT. (4. 7K)        |                        |                    |
| S1 -4            | 2A, 2B        |                   | S40-1064-05       | PUSH SWITCH                  |                        |                    |
| D1 -5            |               |                   | S5566B            | DIODE                        |                        |                    |
| D6 ,7            |               |                   | RD11ES(B)         | ZENER DIODE                  |                        |                    |
| D8               |               |                   | RD8. 2JS(B)       | ZENER DIODE                  |                        |                    |
| D9 ,10           |               |                   | RD5. 1JS(B)       | ZENER DIODE                  |                        |                    |
| D11              |               |                   | 1SS178            | DIODE                        |                        |                    |
| D12 -15          |               |                   | 1SS133            | DIODE                        |                        |                    |
| D12 -15          |               |                   | 1SS176            | DIODE                        |                        |                    |
| D16              |               |                   | MA27T(A)          | VARIATOR                     |                        |                    |
| D20              |               |                   | 1SS133            | DIODE                        |                        |                    |
| D20              |               |                   | 1SS176            | DIODE                        |                        |                    |
| IC1              |               |                   | UPD7520C-028      | IC(MICROPROCESSOR)           |                        |                    |
| IC2              |               |                   | TC9142P           | IC(QUARTZ PLL MOTOR CONTROL) |                        |                    |
| IC3              |               |                   | UPD4013BC         | IC(D FLIP-FLIP X2)           |                        |                    |
| IC4 ,5           |               |                   | M5218P            | IC(OP AMP X2)                |                        |                    |
| IC6 ,7           |               |                   | M5218P-K          | IC(OP AMP X2)                |                        |                    |
| IC8              |               |                   | AN6562            | IC(OP AMP X2)                |                        |                    |
| IC9              |               |                   | LC4066BH          | IC(BILATERAL SWITCH X4)      |                        |                    |
| PH1              | 1B            |                   | NJL5141E-A        | PHOTO TRANSISTOR             |                        |                    |
| Q1               |               |                   | 2SC3666           | TRANSISTOR                   |                        |                    |
| Q3 ,4            |               |                   | 2SC1685(R,S)      | TRANSISTOR                   |                        |                    |
| Q3 ,4            |               |                   | 2SC2320(E,F)      | TRANSISTOR                   |                        |                    |
| Q3 ,4            |               |                   | 2SC945(A)(Q,P)    | TRANSISTOR                   |                        |                    |
| Q5               |               |                   | DTA124EN          | DIGITAL TRANSISTOR           |                        |                    |
| Q6               |               |                   | 2SC1384NC(R,S)    | TRANSISTOR                   |                        |                    |
| Q7               |               |                   | 2SA1286           | TRANSISTOR                   |                        |                    |
| Q8               |               |                   | 2SC1685(R,S)      | TRANSISTOR                   |                        |                    |
| Q8               |               |                   | 2SC2320(E,F)      | TRANSISTOR                   |                        |                    |
| Q8               |               |                   | 2SC945(A)(Q,P)    | TRANSISTOR                   |                        |                    |

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PARTS LIST

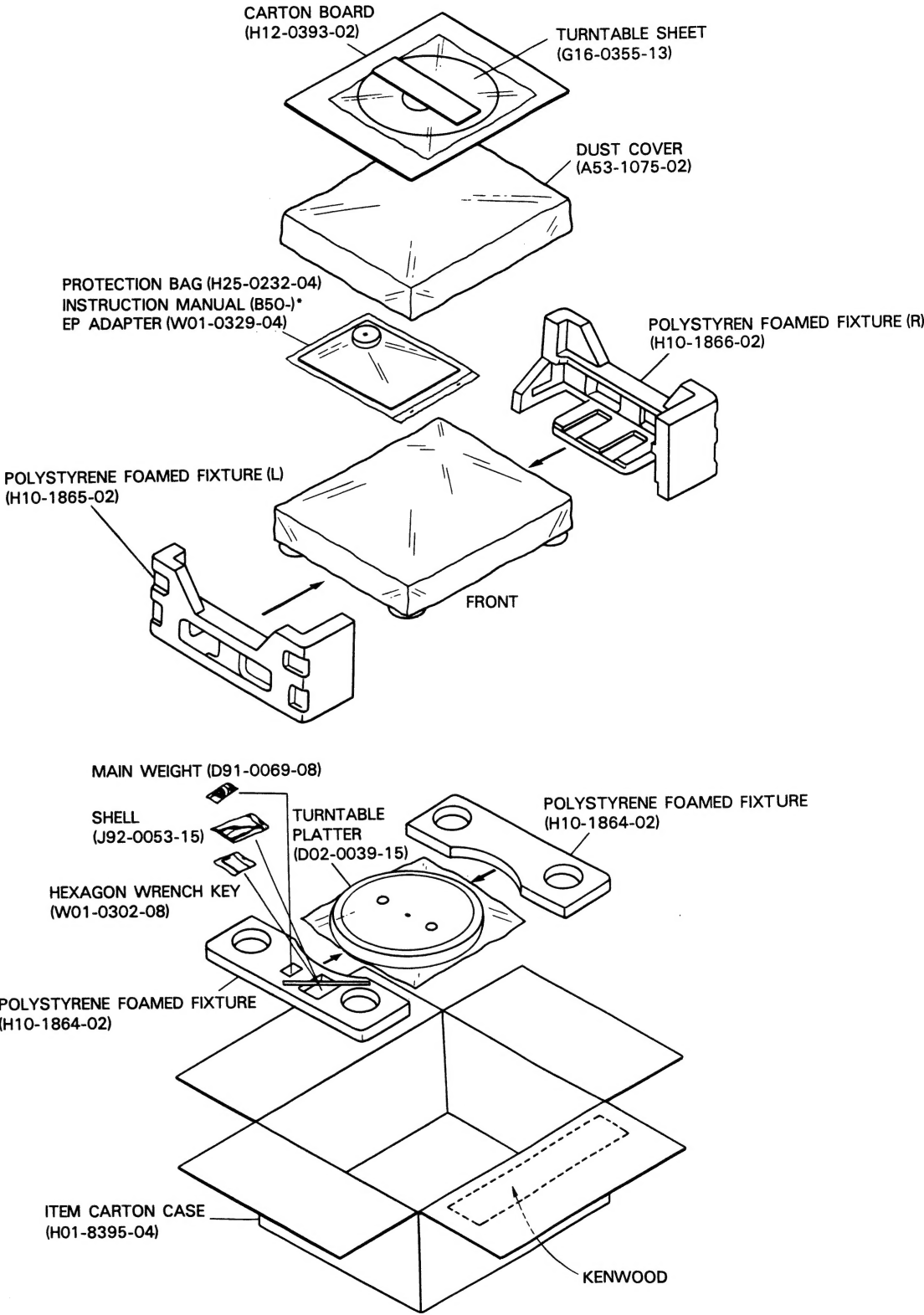
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|---------------------------------------|---------------|-------------------|---|---|------------------------|--------------------|
| Q9<br>Q10 ,11<br>Q12<br>Q13<br>Q14    |               |                   | 2SK105(F,H)<br>2SC2320(F,G)<br>2SD1266<br>2SB941<br>2SD882*1(Q,P) | FET<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR<br>TRANSISTOR |                        |                    |
| Q15 ,16<br>Q17                        |               |                   | 2SB772*1(Q,P)<br>2SD882*1(Q,P)                                    | TRANSISTOR<br>TRANSISTOR                                    |                        |                    |
| MOTOR ASSY (X92-1100-00)              |               |                   |   |   |                        |                    |
| -                                     |               |                   | H25-0232-04   | PROTECTION BAG (235X350XD.03)                               |                        |                    |
| 142                                   | 3B            |                   | N29-0085-05   | RETAINING RING  |                        |                    |
| 121<br>123                            | 3B<br>3B      |                   | T50-1011-03<br>T50-1031-04  | YÖKE<br>ROTÖR ASSY  |                        |                    |
| ELECTRIC CIRCUIT MODULE (W02-0660-03) |               |                   |   |   |                        |                    |
| L1 ,2<br>H1 ,2                        |               |                   | L39-0127-05<br>T95-0031-15  | DRIVE COIL<br>HALL ELEMENT                                  |                        |                    |

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PACKING



\*Refer to Parts List on page 14.

KD-7010

KD-7010

SPECIFICATIONS

|                                |  |                                       |   |
|--------------------------------|--|---------------------------------------|---|
| <b>Motor and turntable</b>     |  | <b>Tonearm</b>                        |   |
| <b>Drive System</b> .....      | Direct-drive system  | <b>Type</b> .....                     | Static-balance type, J-shape tonearm                                |
| <b>Motor</b> .....             | Quartz PLL coreless & slotless DC servo motor                        | <b>Effective Tonearm Length</b> ..... | 245 mm (9-5/8")   |
| <b>Turntable Platter</b> ..... | 33 cm (13") diameter Aluminum alloy, Die-cast                        | <b>Overhang</b> .....                 | 15 mm (9/16")   |
| <b>Speeds</b> .....            | 2 speeds, 33-1/3 and 45 rpm  | <b>Tracking Error</b> .....           | +1.8° to -1.0°  |
| <b>Wow &amp; Flutter</b> ..... | Less than 0.02% (WRMS)<br>Less than 0.03% (DIN)                      | <b>Tracking Force Range</b> .....     | 0 to 3 grams (0.1 g Step)   |
| <b>Rumble</b> .....            | DIN weighted better than -80 dB<br>DIN unweighted better than -55 dB | <b>Usable Cartridge Weight</b> ...    | 2.0 to 12 grams (with supplied head-shell)                          |
|                                |  | <b>Miscellaneous</b>                  |   |
|                                |  | <b>Power Consumption</b> .....        | 25 watts  |
|                                |  | <b>Dimensions</b> .....               | W: 490 mm (19-5/16")<br>H: 182 mm (7-3/16")<br>D: 410 mm (16-5/32") |
|                                |  | <b>Weight (Net)</b> .....             | 13.7 kg (30.14 lb)  |

**Note:**

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the CANADA (P) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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